

**Fact Sheet**  
**January 2002**

# **Tritium Treatability Study to Resume at Lawrence Berkeley National Laboratory**



***BERKELEY, CALIFORNIA***

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The Department of Toxic Substances Control (Department) is issuing this fact sheet to provide information about the Department's role in the resumption of a treatability study involving tritium, a radioactive material, at the Lawrence Berkeley National Laboratory's (Laboratory's) National Tritium Labeling Facility (Labeling Facility).

## **National Tritium Labeling Facility**

The Labeling Facility is located at the Lawrence Berkeley National Laboratory in Berkeley, California (see page 3). The facility was established in 1982 as a National Institute of Health Resource Center. The Labeling Facility's role has been to conduct research in "tritium labeling" methods and help biomedical researchers study biological processes that can have a role in curing diseases. Tritium labeling research has ceased and the Labeling Facility is closing.

## **Tritium Labeling**

Tritium labeling involves mixing tritium with a variety of pharmaceuticals and other biological molecules. A potential cancer drug might be tritium-labeled so that the researchers could trace where the drug is deposited in the body and how it is metabolized. Tritium is radioactive and can be easily detected and measured. "Non-labeled" material would be hard to find in the body.

## **Waste Generated by Tritium Labeling**

The Labeling Facility produced waste containing water, solvents and silica gel contaminated with tritium as part of the waste from the labeling process. Because the waste contains both hazardous waste and radioactive material, the waste is classified as a "mixed waste". The hazardous waste-component is regulated by the Department. The tritium is regulated by the United States Department of Energy (U.S. DOE). Tritium exhausted to the air as a result of any treatment of the mixed waste is also subject to United States Environmental Protection Agency (U.S. EPA) jurisdiction under the National Emission Standards for Hazardous Air Pollutants Program.

## **Treatability Study of Tritium Labeling Waste**

Over the past several years, the Laboratory found fewer off-site disposal options for mixed waste and began the process of identifying a means to treat rather than dispose of its mixed waste. In 1996, the Laboratory initiated a "treatability study" to determine if catalytic chemical oxidation (the oxidation process), a

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process using high temperature to remove waste or convert it to a form which can be less toxic, could be used to remove the hazardous constituents from the mixed labeling wastes.

## **Treatability Study Regulation**

The legal requirements for conducting a treatability study without a permit are complex. The treatability study must be necessary to make one or more of the five determinations listed in the definition of a treatability study as set forth in 40 Code of Federal Regulations part 260.10. Furthermore, the study must be performed in accordance with requirements set forth in the California Code of Regulations, title 22, section 66261.4, subdivisions (e) and (f). The Department's jurisdiction is limited to enforcing subdivision (e) and (f) requirements and assuring that the study is necessary. Regulation of the tritium component of the waste during the study remains under the jurisdiction of the U.S. DOE and U.S. EPA.

## **Treatability Study Suspended**

In July 1998, the use of a kiln in the oxidation process caused an unplanned release of tritium to the air. After the release, the Laboratory stopped using the kiln. U.S. EPA and U.S. DOE were informed of the 1998 release and the Laboratory's corrective actions and did not prohibit further study that does not involve a kiln. The Department investigated matters within its jurisdiction. In October 2000, the Department concluded that the Laboratory had obtained enough information to make all of the technical determinations listed in the definition of a treatability study. Based on this conclusion, the Department notified the Laboratory that further treatability study of tritium labeling waste would require either a hazardous waste facility permit or additional information that shows why further study is needed. After receiving this notification, the Laboratory suspended the treatability studies.

## **Treatability Studies May Continue**

Starting in September 2001, the Laboratory submitted additional information to the Department and requested that the Department concur with the Laboratory's conclusion that the treatability study could continue without a hazardous waste facility

permit. The Department reviewed the information and visited the Facility. The Department concluded that additional study was needed to make three of the technical determinations set forth in the definition of a treatability study. On December 28, 2001, the Department notified the Laboratory that the Department concurred that the treatability study could continue without a hazardous waste facility permit. However, the Department's concurrence is limited to the remaining waste. This is about 5 liters, which is approximately 1% of the 400 kilograms per waste stream limit that state regulations allow to be studied.

## **Additional Information**

If you have additional questions or concerns, please contact the following DTSC staff:

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## **Other Key Contacts:**

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## Public Websites

*Department of Toxic Substances Control*

[www.dtsc.ca.gov](http://www.dtsc.ca.gov)

*Department of Energy*

[www.energy.gov](http://www.energy.gov)

*U.S. Environmental Protection Agency*

[www.epa.gov](http://www.epa.gov)

*Lawrence Berkeley National Laboratory*

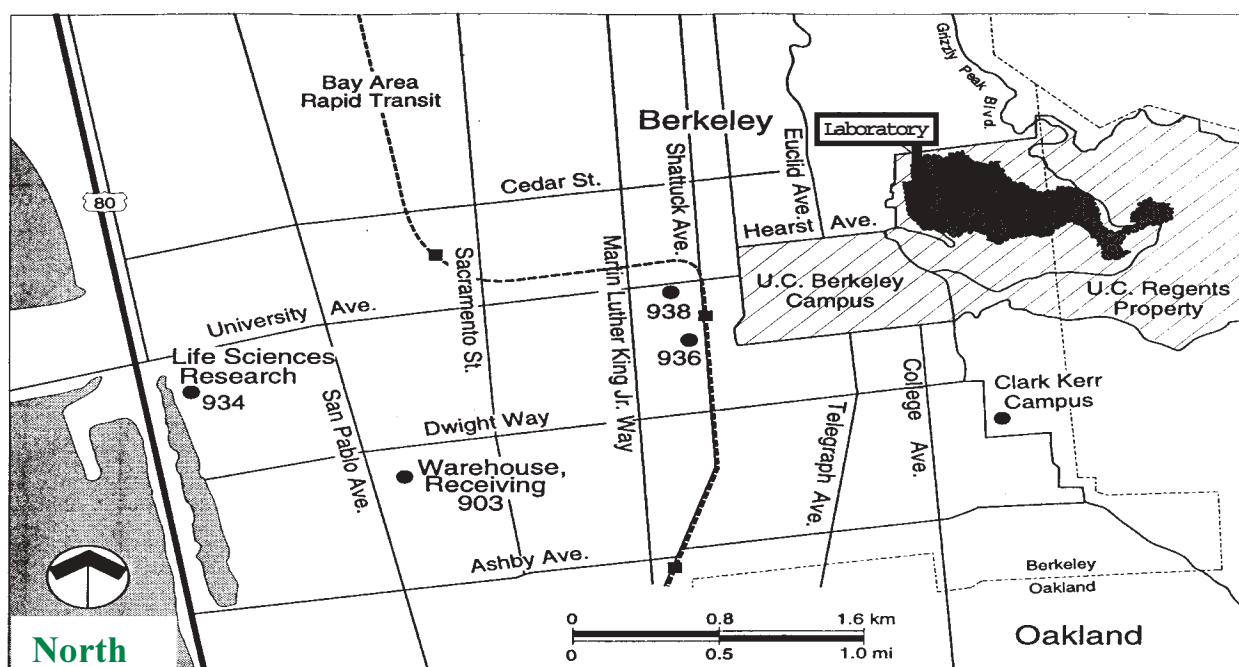
[www.lbl.gov](http://www.lbl.gov)

*National Tritium Labeling Facility*

[www.LBL-Programs/NTLF](http://www.LBL-Programs/NTLF)

## Notice to the Hearing-Impaired

You can obtain additional information by using the California State Relay Service at 1-888-877-5378 (TDD). Ask them to contact Lora David at 916-255-6681 regarding the treatability study at the National Tritium Labeling Facility.



## Mailing List Coupon

If you have any comments concerning the **Lawrence Berkeley National Laboratory** site or if you would like to be put on the site specific mailing list, please take a moment to fill out the information below and mail it to Ms. Lora David, DTSC, 8800 Cal Center Drive, Sacramento, California, 95826. DTSC mailing lists are solely for the purpose of keeping persons informed of DTSC activities. Mailing lists are not routinely released to outside parties. However, they are considered public records, and, if requested, may be subject to release.

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